Guidance Memorandum

DATE: JANUARY 31, 2002

TO: Compliance Inspectors

FROM: Lamar Bradley

RE: Criteria for Demonstrating Impressed Current Cathodic Protection

When you inspect a UST with an impressed current (IC) cathodic protection system, you should be aware that there are two criteria which demonstrate adequate cathodic protection when impressed current is used.

The first criterion is the familiar –850 mv, but this number is only important if it is the **"instant off"** reading. A reading of –850 mv *with the current applied* or "current on" is not an acceptable test result for cathodic protection. When a CP tester tests an impressed current system, the results should show voltage readings for "current on" and "instant off". The "instant off" reading is the one you should notice and it must be at least –850 mv or greater. If the instant off voltage is less than –850 mv, the tester should perform a second test to determine whether or not the tank is adequately protected.

The second test is to determine if the structure has at least 100 mv of polarization. This is often called the "100 millivolt shift". On our form it would be the figure labeled "voltage decay". It is the difference between the "instant off" reading and the "final voltage". If this figure is at least 100 mv, the structure is considered protected. This figure is measured by cutting the power to the rectifier and watching the decrease in the voltage as the tank depolarizes. This depolarization can take quite a long time. If a tank has a pretty good coating or the soil is highly resistant, it may take days for the tank to fully depolarize.

Only one of these criteria must be met in order for a UST system to pass an IC system test. If the instant off criterion is met, the tester usually does not proceed with the 100 mv shift test.

If you observe impressed current test results and only see "current on" readings, that is not evidence of a valid test of an impressed current system. A valid passing test will have instant off readings of -850 mv or greater, OR show at least 100 mv difference between instant off and final voltage numbers. We should be questioning any and all CP test results that merely show "pass" or "fail" without any measurements to substantiate those results.

Please call me if you have any questions about this memo, or concerns you wish to discuss on this subject.